MPPT Solar Integrated Inverters

(500VA~2500VA)

User Manual

THE SOLAR TECH CO.,LTD.

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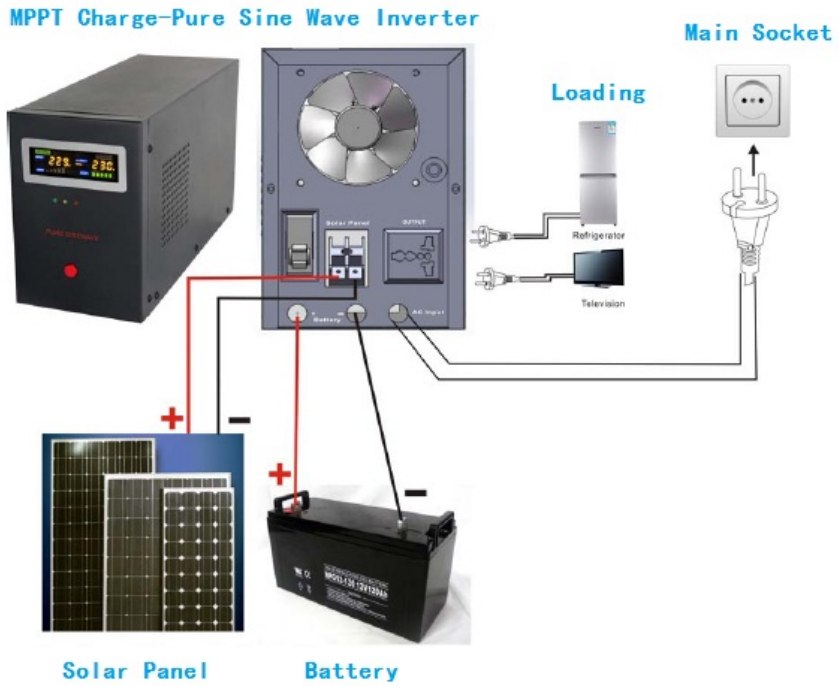
Dear Sir or Madam,
Thank you for choosing our products! Before you use it, please read this manual carefully, which includes installation, using, precautions, troubleshooting and other important information. Please keep it well.

1.Salient Features:

1.1 Pure sine wave output, strong compatibility, which can be connected with refrigerators, electric fans, televisions, fluorescent lamps etc, without damage for loads.
1.2 C.R.G.O Toroidal transformers technology , more reliable, Low static loss
1.3 Double CPU intelligent control, high performance
1.4 MPPT solar charging technology, more efficient
1.5 With wide frequency range, auto-tracking for main frequency and inverter output 50/60Hz
1.6 Intelligent selection between main mode and solar mode, more energy-saving
1.7 Full range of automatic protections & alarm: overload, short circuit, overvoltage, under voltage, high temperature etc.
1.8 Friendly display interface, clear working status

2. Product installation & precautions:

2.1 Product installation & connection diagram



Product installation & connection steps:

1) Please open the packing carton to verify that products good, and unplug the power cord to ensure the output terminal without any connection;
2) Please connect the battery in right way, and check the voltage & polarity of positive/negative carefully;
3) Connect the solar panels properly, and check the voltage & polarity of positive & negative carefully;

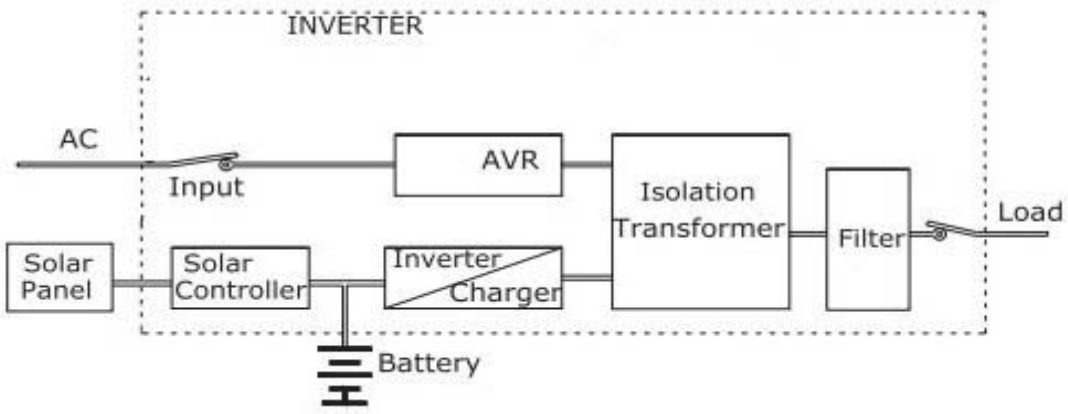
4) Select the machine working mode: for solar energy systems , select the PV priority, otherwise AC priority
5) Press the ON/OFF button to start, to ensure it can work normally and connect the mains.
6) Open the solar input switch for solar charging;
7) Connect the input terminals with the loads which are turn off, and then open them one by one.

2.2 Precautions

1) connect properly to the battery and solar panel, reversed or high voltage will cause serious damage.
2) be connected to ground securely
3) don't load beyond the rated power. If connect the refrigerators, fans such inductive loads, the loading capacity should not exceed the 30% of the rated power.
4) don't install this products outdoors, avoid the electricity leakage caused by any water.
5) when the product work properly, the cabinet will have a certain degree of heat. It should be installed at a distance over 50 cm far away the human venue area. To ensure adequate ventilation around, and away from flammable materials
6)If the product malfunctions, disconnect the mains input immediately , and then shut down. Disconnect the battery and solar panel switch, and take note of the failure and fault phenomena, etc, contact your dealer promptly, and give the products to the professional personnel.

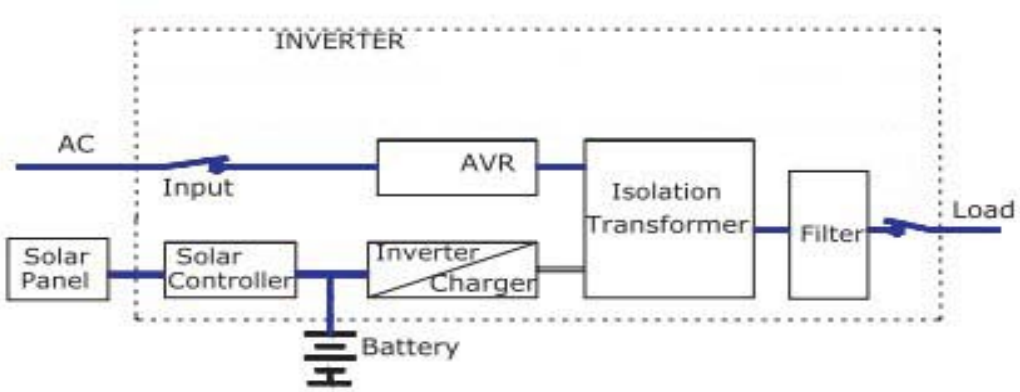
3. Working principle:

3.1 System circuit diagram

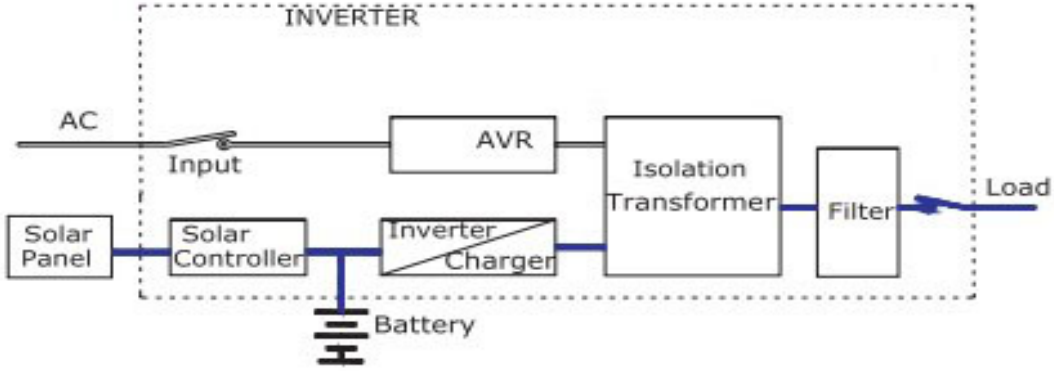


3.2 AC priority mode:

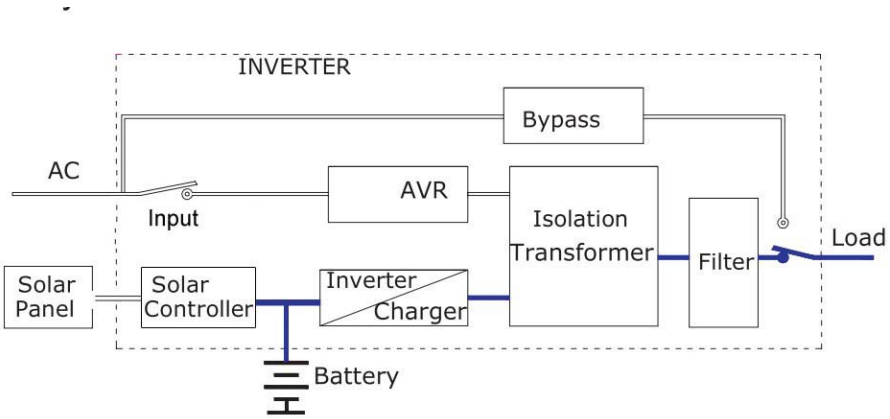
1) When AC power supply is normal: AC input will provide power to equipments through regulator after removing the high frequency harmonic with filter. At this time, PV gives power to batteries only through MPPT control system.



2）When Mains overrun or cut off: The system will convert the energy of battery and PV systems to the power needed by equipments promptly, and give power supply to the user equipment to ensure power supply continuity. If PV solar power is not strong enough, then battery will give power to the user

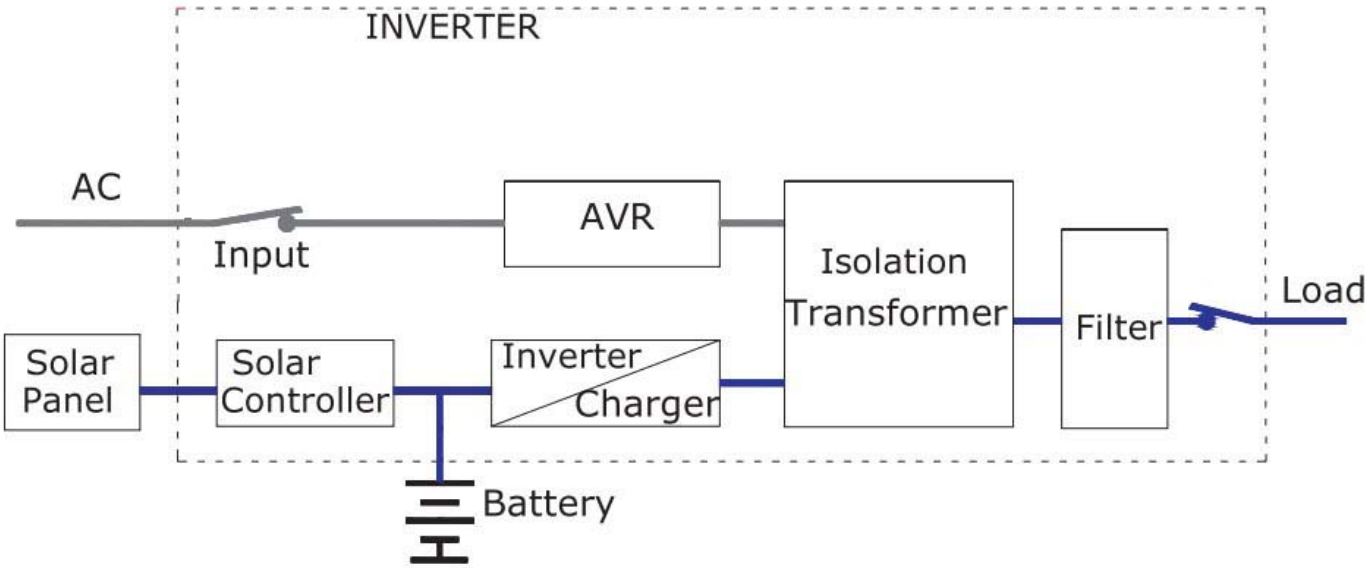


3）When Mains overrun or cut off and without PV (no sun power): The system will convert the energy of battery to the power needed by equipments promptly, and give power supply to the user equipment to ensure power supply continuity

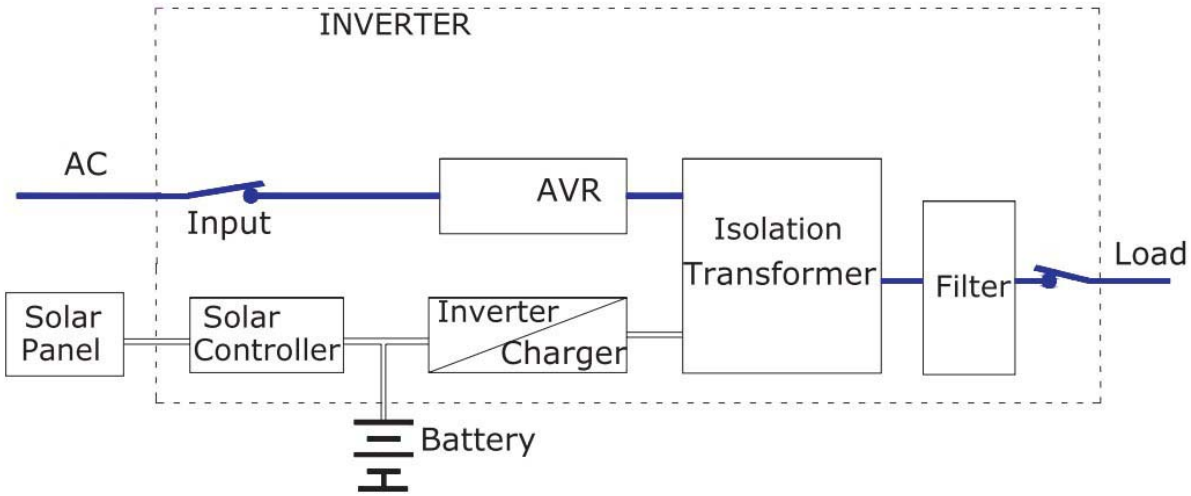


3.3 PV priority mode:

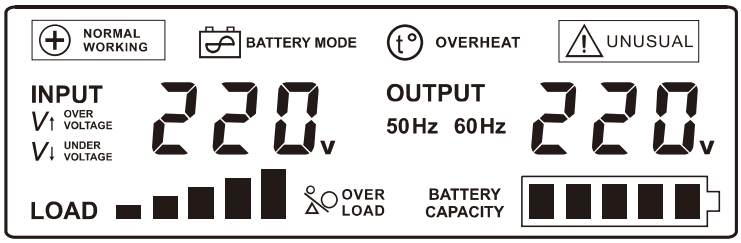
1）During the day, with ample sunlight, and Mains is normal: solar panel will adjust to the largest state through solar power controller and give power to load through the inverter (Mains as a standby), and charge the battery at the same time (see below diagram);

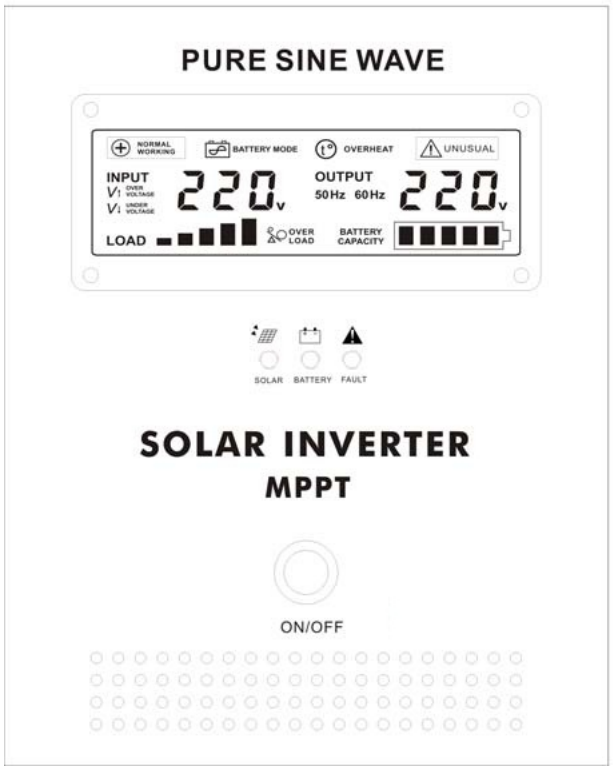


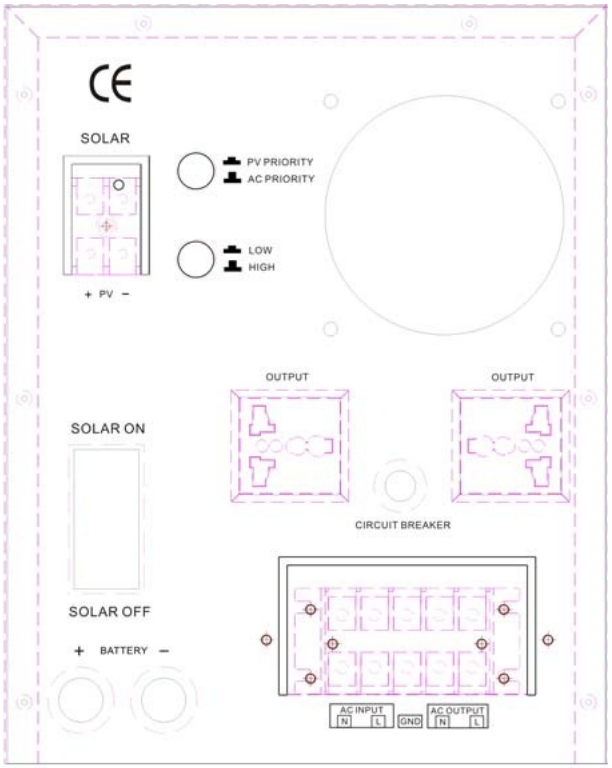
2）During the evening (or rainy days, with no sun), and Mains is normal: system will provide power through battery first, discharge until to low voltage protection, and then automatically switch to the mains and provide the power to loads through the regulator, and supplement electricity to battery till the set value (reserved a certain power in case of emergency situation, but not full charged), finally wait for solar panel to charge it full.



4. Product panel and display details:

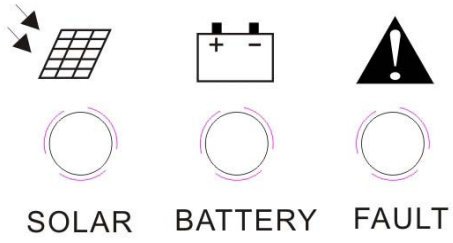






● detail display

NORMAL WORKING	city power input normal, device through AVR supplies output
BATTERY MODE	city power input abnormal, battery through inverter supplies AC output
OVERHEAT	temperature is too high, device cuts off output
UNUSUAL	battery over voltage,short circuit, high MOSFET' s temperature
OVER VOLTAGE	city power input is over voltage
UNDER VOLTAGE	city power input is low voltage
OVER LOAD	loading exceeds device's rated power
LOAD	loading bar showing the loading situation
BATTERY CAPACITY	battery bar showing the battery capacity, when in charging, the bar will be flashing
INPUT 220v	input voltage indication
OUTPUT 50Hz 220v	output voltage indication and frequency indication



Left Green LED: Solar panel connect state. Long light means normal. Light off or flash means connect unusual

Middle Yellow LED: Battery connect state: long light means normal, light off or flash means connect unusual

Right Red LED : means abnormal state, light means solar part abnormal

5.ON/OFF Instructions:

5.1 AC priority

1) On: When Mains is normal, inverter will start normally into AC mode, and at the same time will charge the battery; when the Mains is abnormal or no input , press the button "ON" in 3 seconds, it will start and go into Inverter mode, when mains recover, it will automatically switch to AC mode, and charge the battery

2）Off: Press the shut-down ("OFF") in 3 seconds, it will cut off the output, in AC mode, it will continue to charge the battery and not switch to inverter mode again.

5.2 PV Priority

1）On: When press the start button ("On") in 3 seconds, or inverter starts automatically when Mains recover, If battery is full enough, then it will switch to battery mode , and supply power to loads (Mains as a stand-by)

2) Off: When inverter shut down and cut off the output, it will not switch to the inverter mode. Note: currently in inverter mode, if AC input is high voltage it need cut off the mains to shut down; When AC input voltage is low, it can switch to Mains mode after shut down and no output.

3） Switch between Mains & invert mode : in Mains, when it shut down, it can not switch to inverter mode. When system start, if Mains is abnormal or battery is charged full enough by the solar panel, it will switch to inverter mode. Under this, when battery is low voltage it can switch to mains mode automatically.

5.3 Turning on steps;

1) Please ensure the battery connecting properly (positive/ negative and voltage parameters consistent with the product identification), and then turn on the battery switch
2) Please ensure the solar panel connecting properly (positive/ negative and voltage parameters consistent with the product identification), and then turn on the solar input switch
3) Press the button "on/off" in 3 seconds, and start the inverter
4) Turn on the solar panel input switch , and it will charge automatically
5) Connect the mains properly, after the inverter starts normally, and then start the mains switch
6) After 30 seconds, inverter will output normally and connect the loading, then start the loads one by one.

5.4 Turning off steps:

1) Turn off the loads one by one
2) Press the shut-down ("Off ") manually in 3 seconds, and cut the output
3) Unplug the power cable or connector cable, cut off the Mains input (if no need Mains charging)
4) Turn off the switch of solar panel on the real panel (If no need Solar panel charging)
5) Turn off the switch of battery on the real panel (if no need charging)

6. Specifications:

Solar Integrated Off-Grid Inverter							
Model		500VA	800VA	1000VA	1500VA	2000VA	2500VA
Power Capacity		300W	500W	700W	1050W	1400W	1800W
Battery voltage		12Vdc	12Vdc	12Vdc	24Vdc	24Vdc	24Vdc
Working mode		PV(Photovoltaic priority) / AC（AC priority）Optional					
PV	Input voltage range	12Vdc-25Vdc			24Vdc-50Vdc		
	Max. charge current	10A/20A/30A/40A/60A Optional					
	Max. Conversion efficiency	98%					
Display	Panel indicator light	LED Graphic Screen LED lights					
Mains status （Optional）	Input voltage range	140Vac~275Vac					
	Input Frequency range	45-65 Hz（Automatically transfer to inverter power when over frequency）					
	Output voltage range	190Vac~245Vac					
	Input PF.（AC/DC）	98%					
	Efficiency	Mains mode≥ 96%					
	Charge current	10A					
	Mains overload	warning until decrease load					
	Short circuit	Yes					
Inverter output	Inverter output voltage	220V±3%					
	Output frequency	50 Hz / 60Hz ± 0.3Hz frequency adaptive					
	Output power factor	≥0.8					
	Wave form distortion	Linear load≤ 3%					
	PV-AC transfer time	4Ms typical value Max.6 Ms					
	Efficiency	Inverter mode≥ 80%					
	Inverter overload	110%-130% shutdown at 30s，130%-150% shutdown at 3s					
	Short circuit	Systems automatically shut down					
Alarm	Mains abnormal	1time/1S, silence auto after 5S					
	Low battery	1time/1S and flash battery last grid					
	Overload	1time/ 1S and display "overload" grid					
Communication interface		RS232（Optional）					
Others	Output sockets	Universal sockets / customized					
	Surge protection	Optional					
	Ambient temperature	0℃ ～40℃					
	Ambient humidity	10% ～90%(Non Condensed)					
	Noise	≤ 50dB					

Remark: the solar panel power configuration is related with the inverter working mode and charging current, we suggest match the PV power according to projects needs.